



University of Bahrain

CE -- CIT -- UOB

TEST 1 (27 Oct 2014) ITCE 363: Electronics 2

Dr. Riyadh Al-Hakim

Q1. [50 marks]

- Using 3 equal stages of 741 OP AMPs design a non-inverting amplifier that can amplify 1 mV low frequency signal to 1 v. Assume $+V_{CC} = |-V_{EE}| = 12$ V.
- What will be the gain of the above amplifier at 10 kHz?
- Estimate the frequency at which the gain will drop by 18 dB
- What will be the bandwidth if the peak input signal is increased to 10 milli-volt?
- Plot the output waveform if the input signal is $v_s = 15 \sin(2\pi 1000t)$ milli-volt

Q2. [50 marks]

In the following amplifier, assume $R_1=R_2= 100$ k Ω , $C_{c1}=C_{c2}=C_E = \infty$, $L_T = 10$ μ H with 0.5 Ω internal resistance, r_{out} of the transistor= 50 k Ω , C_{out} of the transistor= 10 pF:

- Find R_E for $I_c = 1$ mA. Find V_{CE}
- Find C_T that tunes the amplifier at 2 MHz
- Find the BW of the amplifier
- Find the voltage gain of the amplifier
- If this amplifier is driving $R_L = 10$ k Ω , what will be the BW and voltage gain.

